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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/524,064

02/08/2005

Kouji Haga

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EXAMINER

UMEZ ERONINI, LYNETTE T

ART UNIT

PAPER NUMBER

1765

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
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3 MONTHS

04/03/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

**Office Action Summary**

Application No.

10/524,064

Applicant(s)

HAGA ET AL.

Examiner

Lynette T. Umez-Eronini

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 03 January 2007.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 2-9 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 3 and 8 is/are allowed.
- 6) ☒ Claim(s) 2, 4-7 and 9 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 2/8/05 & 5/9/05.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Election/Restrictions***

1. Applicant's election with traverse of claims 2-9 in the reply filed on 1/3/2007 is acknowledged. The traversal is on the ground(s) that the present application is a National Stage Application and US standard for restriction has been applied in the restriction requirement. Applicants' Remarks are persuasive. Hence, the previous US standard of restriction does not apply and the restriction requirement is withdrawn.

### ***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 3 and 9 are rejected under 35 U.S.C. 102(e) as being anticipated by Schroeder et al. (US 6,936,543 B2).

Schroeder teaches a CMP system (Abstract) that comprises an abrasive such as ceria (same as Applicants' cerium oxide particles, column 5, lines 19-24 and 50-55), an amphiphilic nonionic surfactant such as 2,4,7,9-tetramethyl-5-decyne-4,7-diol ethoxylate

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(same as Applicants' formula (II), column 6, lines 61-64 and column 7, lines 44-79); and a liquid carrier such as water (column 9, lines 46-55), which reads on,

A CMP polishing slurry comprising cerium oxide particles, an organic compound having an acetylene bond and water,

wherein the organic compound having the acetylene bond is represented by the general formula (II), as shown in the claim,

wherein  $R^3$  to  $R^6$  are each independently a hydrogen atom or a substituted or unsubstituted alkyl group of 1 to 5 carbon atoms;  $R^7$  and  $R^8$  are each independently a substituted or unsubstituted alkylene group of 1 to 5 carbon atoms; and "m" and "n" are each independently 0 or a positive number. Since Schroeder's polishing system comprises an abrasive, polymer, and water as claimed in the present invention, then using Schroeder's system in the same manner as in the claimed invention would result the same wherein a CMP polishing slurry used for polishing inorganic insulating film, in **claim 3**; and

a solution for a CMP polishing slurry, wherein the solution contains an organic compound having an acetylene bond represented by the general formula (II), in **claim 9**.

### ***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Schroeder (US '543 B2) as applied to claim 3 above, and further in view of Kon et al. US 2005/0126080 A1).

Schroeder differs in failing to teach the CMP polishing slurry, which further contains a water-soluble high polymer compound comprising a polymer of a vinyl compound, **in claim 4**; and

Kon teaches a polishing compound that comprises cerium oxide abrasive, water and an additive, wherein the additive is a water-soluble organic polymer such as ammonium polyacrylate (Abstract and [0026]) and [0051]), which is added as a dispersant [0052].

Since Kon illustrates a polishing slurry comprising a water-soluble organic polymer compound comprising a polymer of a vinyl compound is known, then it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Schroeder by employing a polymer compound, as taught by Kon for the

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purpose of providing a semiconductor polishing compound, which simultaneously has dispersion stability, excellent scratch characteristics and excellent polishing planarization characteristics (Kon, [0015-0016]).

7. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Schroeder (US '543 B2) as applied to claim 3 above, and further in view of Naoyuki et al. (JP 2001185514) and Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Schroeder (US '543 B2) in view of Naoyuki et al. (JP 2001185514).

Schroeder differs in failing to teach wherein the substrate on which a film to be polished is formed is pressed under pressure against a polishing cloth on a polishing platen, **in claims 5 and 6.**

Naoyuki teaches a method of polishing a substrate wherein the substrate forming a film to be polished is pressed to a polishing cloth of a polishing surface plate to be pressurized, while the substrate and the polishing surface plate are moved to polish the film to be polished (SOLUTION).

Since Naoyuki illustrates the substrate on which a film to be polished is formed is pressed under pressure against a polishing cloth on a polishing platen is known, then it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Schroeder by employing Naoyuki's polishing method for the purpose of polishing a polishing face at high speed without scratches and with a highly flat surface (PROBLEM TO BE SOLVED).

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8. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Schroeder (US '543 B2) and Kon (US '080 A1) as applied to claim 3 above, and further in view of Naoyuki (JP '514).

Schroeder and Kon differs in failing to teach wherein the substrate on which a film to be polished is formed under pressure against a polishing cloth on a polishing platen.

Naoyuki teaches a method of polishing a substrate wherein the substrate forming a film to be polished is pressed to a polishing cloth of a polishing surface plate to be pressurized, while the substrate and the polishing surface plate are moved to polish the film to be polished (SOLUTION).

Since Naoyuki illustrates the substrate on which a film to be polished is formed is pressed under pressure against a polishing cloth on a polishing platen is known, then it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Schroeder in view of Kon by employing Naoyuki's polishing method for the purpose of polishing a polishing face at high speed without scratches and with a highly flat surface (PROBLEM TO BE SOLVED).

***Allowable Subject Matter***

9. Claims 2 and 8 are allowed.

10. The following is a statement of reasons for the indication of allowable subject matter:

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As to claim 2, the prior art of record taken alone or in combination fails to teach, suggest, or render obvious a CMP polishing slurry wherein the organic compound having the acetylene bond as defined by the claim; and

As to claim 8, the prior art of record taken alone or in combination fails to teach, suggest, or render obvious a solution for CMP polishing slurry wherein the organic compound having the acetylene bond represented by the formula (I), as defined by the claim.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lynette T. Umez-Eronini whose telephone number is 571-272-1470. The examiner is normally unavailable on the First Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nadine Norton can be reached on 571-272-1465. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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March 28, 2007

NADINE WORTON  
SUPERVISORY PATENT EXAMINER  
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